

CLAIMS

What is claimed is:

1. A locking strut comprising:
 - a housing;
 - a piston rod extending through said housing;
 - a baffle mounted on said piston rod dividing said housing into two chambers, said baffle being slidably disposed within said housing;
 - an orifice through said baffle for allowing fluid to pass between said chambers;
 - a ferromagnetic plate disposed within said housing for movement between an open position spaced from said baffle for allowing fluid to pass through said orifice between said chambers and a closed position covering said orifice to prevent fluid flow between said chambers; and
 - an electromagnetic driver disposed within said housing, said driver being selectively energized in response to external control signals to exert a driver force, said driver force acting upon said ferromagnetic plate for selectively moving said ferromagnetic plate between said open and closed positions to control fluid flow between said chambers.
2. The locking strut as set forth in claim 1 further comprising a valve spring exerting a spring force disposed adjacent said ferromagnetic plate and movable from a resting state wherein said valve spring is neither compressed nor expanded, said spring force being overcome by said driver force when said driver is energized to move said ferromagnetic plate between said open and closed positions.
3. The locking strut as set forth in claim 2 wherein said ferromagnetic plate comprises a ferromagnetic flange mounted to a stem.
4. The locking strut as set forth in claim 3 wherein said driver mounts to said piston rod.
5. The locking strut as set forth in claim 4 wherein said piston rod includes an opening for receiving said stem, said stem extending through said baffle into said opening.
6. The locking strut as set forth in claim 5 wherein said valve spring seats within said opening in said resting state when said ferromagnetic plate is in said open position, and

energization of said driver attracts said ferromagnetic flange, thereby moving said ferromagnetic flange into engagement with said baffle and compressing said valve spring.

7. The locking strut as set forth in claim 5 wherein said valve spring seats with said opening in said resting state when said ferromagnetic plate is in said closed position, and energization of said driver repels said ferromagnetic flange, thereby moving said ferromagnetic flange out of engagement with said baffle and expanding said valve spring.

8. The locking strut as set forth in claim 3 wherein said ferromagnetic plate further comprises a valve mounted to said stem for engaging said baffle to close said orifice.

9. The locking strut as set forth in claim 8 further comprising a guide tube mounted between said driver and said baffle, said valve being slidably disposed within said guide tube.

10. The locking strut as set forth in claim 9 wherein fluid flows through said orifice into said guide tube, said guide tube including a passage for allowing fluid to pass between said chambers.

11. The locking strut as set forth in claim 10 wherein said stem extends through said driver from said valve to said ferromagnetic flange such that movement of said ferromagnetic flange effects movement of said valve.

12. The locking strut as set forth in claim 11 wherein said valve spring comprises a guide spring disposed within said guide tube between said driver and said valve and a plate spring disposed between said driver and said ferromagnetic flange, said guide spring and said plate spring being in said resting state when said ferromagnetic plate is in said open position such that energization of said driver attracts said ferromagnetic flange, moving said stem and forcing attached said valve into engagement with said baffle, said ferromagnetic flange compressing said plate spring and said valve expanding said guide spring.

13. The locking strut as set forth in claim 11 wherein said valve spring comprises a guide spring disposed within said guide tube between said driver and said valve and a plate spring disposed between said driver and said ferromagnetic flange, said guide spring and said plate spring being in said resting state when said ferromagnetic plate is in said closed position such that energization of said driver repels said ferromagnetic flange, moving said stem and forcing

attached said valve out of engagement with said baffle, said ferromagnetic flange expanding said plate spring and said valve compressing said guide spring.

14. The locking strut as set forth in claim 2 wherein said driver mounts to said piston rod.

15. The locking strut as set forth in claim 14 wherein said valve spring is disposed between said ferromagnetic plate and said baffle.

16. The locking strut as set forth in claim 15 further comprising a retaining plate mounted to said piston rod such that said ferromagnetic plate engages said retaining plate in said open position and engages said baffle in said closed position.

17. The locking strut as set forth in claim 16 wherein said valve spring 6 is in said resting state when said ferromagnetic plate is in said open position, and energization of said driver attracts said ferromagnetic plate, thereby moving said ferromagnetic plate into engagement with said baffle and compressing said valve spring.

18. The locking strut as set forth in claim 16 wherein said valve spring is in said resting state when said ferromagnetic plate is in said closed position, and energization of said driver repels said ferromagnetic plate, thereby moving said ferromagnetic plate into engagement with said retaining plate and expanding said valve spring.

19. The locking strut as set forth in claim 15 wherein said valve spring is in said resting state when said ferromagnetic plate is in said open position, and energization of said driver repels said ferromagnetic plate, thereby moving said ferromagnetic plate into engagement with said baffle and compressing said valve spring.

20. The locking strut as set forth in claim 15 wherein said valve spring is in said resting state when said ferromagnetic plate is in said closed position, and energization of said driver attracts said ferromagnetic plate, thereby moving said ferromagnetic plate out of engagement with said baffle and expanding said valve spring.

21. The locking strut as set forth in claim 14 wherein said valve spring is disposed between said driver and said ferromagnetic plate.

22. The locking strut as set forth in claim 22 wherein said valve spring is in said resting state when said ferromagnetic plate is in said open position, and energization of said driver repels

said ferromagnetic plate, thereby moving said ferromagnetic plate into engagement with said baffle and expanding said valve spring.

23. The locking strut as set forth in claim 22 wherein said valve spring is in said resting state when said ferromagnetic plate is in said closed position, and energization of said driver attracts said ferromagnetic plate, thereby moving said ferromagnetic plate out of engagement with said baffle and compressing said valve spring.

24. The locking strut as set forth in claim 14 further comprising a retaining plate mounted to said piston rod, said valve spring being disposed between said retaining plate said ferromagnetic plate.

25. The locking strut as set forth in claim 24 wherein said valve spring is in said resting state when said ferromagnetic plate is in said open position, and energization of said driver attracts said ferromagnetic plate, thereby moving said ferromagnetic plate into engagement with said baffle and expanding said valve spring.

26. The locking strut as set forth in claim 24 wherein said valve spring is in said resting state when said ferromagnetic plate is in said closed position, and energization of said driver repels said ferromagnetic plate, thereby moving said ferromagnetic plate out of engagement with said baffle and compressing said valve spring.

27. The locking strut as set forth in claim 1 further comprising an electrical lead for supplying power to said driver, said lead extending from said driver through said piston rod to a power source.

28. The locking strut as set forth in claim 27 wherein the power source rapidly cycles current through said lead to produce a partial duty cycle for energizing said driver.

29. The locking strut as set forth in claim 1 further comprising a plurality of orifices spaced circumferentially about said baffle to provide a plurality of fluid passageways between said chambers.

30. The locking strut as set forth in claim 1 further comprising a plurality of drivers disposed within said housing.